

Serial No.: 10/042,006  
Response to OA of 01/27/2005

### **Listing of the Claims**

**This listing of claims will replace all prior versions, and listings, of the claims:**

1. (original) A method for organizing computer messages generated by a computer script analyzer, the method comprising:

analyzing a computer script to generate a plurality of comments about the computer script, each comment of the plurality of comments corresponding to a particular portion of the computer script, each comment identifying a property of the corresponding portion of the computer script;

reordering the plurality of comments so as to group together sets of comments having substantially similar identified properties; and

generating a result comprising a subset of the plurality of comments ordered in grouped sets.

2. (original) A method for organizing warning messages generated by a computer program analyzer, the method comprising:

analyzing a computer program to generate a plurality of warning messages based upon potentially erroneous portions of the computer program, each warning message of the plurality of warning messages identifying at least one potential error in the computer program;

inferring from a subset of the plurality of warning messages at least one suggested-fix heuristic corresponding to each identified potential error in the subset of the plurality of warning messages;

associating each suggested-fix heuristic with the warning message containing the corresponding identified potential error;

reordering the plurality of warning messages so as to group together sets of warning messages having substantially similar associated suggested-fix heuristics; and

generating a result comprising a subset of the plurality of warning messages ordered in grouped sets.

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3. (original) The method of claim 2, further comprising sub-grouping together at least one subset of at least one of the grouped sets of warning messages, wherein each subset of warning messages identifies potential errors with respect to a particular aspect of the computer program.
  4. (original) The method of claim 3, where the particular aspect of the computer program comprises at least one of a variable, an object, an object reference, a location in the computer program, and a condition.
  5. (original) The method of claim 2, further comprising super-grouping together at least one superset of a plurality of the grouped sets of warning messages, wherein each superset of warning messages identifies potential errors with respect to a particular aspect of the computer program.
  6. (original) The method of claim 5, where the particular aspect of the computer program comprises at least one of a variable, an object, an object reference, a location in the computer program, and a condition.
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7. (original) The method of claim 2, wherein the generated result further comprises, for each grouped set, a representative suggested-fix heuristic representing the substantially similar associated suggested-fix heuristics.
  8. (original) The method of claim 7, wherein the generated result does not include the substantially similar associated suggested-fix heuristics.
  9. (original) The method of claim 2, wherein the generated result identifies, for each grouped set, a representative potential error representing the identified potential errors of the warning messages in the grouped set.
  10. (original) The method of claim 2, wherein the generated result identifies, for each grouped set, a representative potential error representing a plurality of distinct potential

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errors identified by the warning messages in the grouped set.

11. (original) The method of claim 2, further comprising, when more than one suggested-fix heuristic is inferred for a corresponding identified potential error, duplicating the warning message containing the corresponding identified potential error so that the associating generates separate suggested-fix heuristic/warning message pairs for each suggested-fix heuristic of the more than one inferred suggested-fix heuristic.

12. (original) The method of claim 2, wherein the reordering and generating comprise:  
reordering the plurality of warning messages so as to cluster warning messages together based on classes of associated suggested-fix heuristics; and  
generating a result comprising a subset of the clustered warning messages.

13. (original) The method of claim 2, wherein the substantially similar associated suggested-fix heuristics of each grouped set of warning messages are identical to each other.

14. (original) The method of claim 2, wherein the generating further comprises displaying one grouped set of warning messages at a time.

15. (original) The method of claim 2, wherein the generating further comprises:  
ordering the grouped sets of warning messages based on group size; and  
generating a result comprising a subset of the ordered group sets of warning messages.

16. (original) A method of determining an actual error in a computer program, the method comprising:  
identifying potential errors in the computer program;  
inferring, for each identified potential error, at least one potential solution;  
grouping together a set of the identified potential errors having substantially similar inferred potential solutions; and

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determining an actual error based on the substantially similar inferred potential solutions of the grouped set of identified potential errors.

17. (original) The method of claim 16, wherein the substantially similar inferred potential solutions and the grouped set of identified potential errors have characteristics suggestive of the actual error.

18. (original) A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

- a computer script;

- a computer script analyzer for analyzing the computer script to generate a plurality of comments about the computer script, each comment of the plurality of comments corresponding to a particular portion of the computer script, each comment identifying a property of the corresponding portion of the computer script;

- a grouping module for reordering the plurality of comments so as to group together sets of comments having substantially similar identified properties; and

- a result file for generating a result comprising a subset of the plurality of comments in grouped sets.

19. (original) A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

- a computer program; a computer program analyzer for analyzing the computer program to generate a plurality of warning messages based upon potentially erroneous portions of the computer program, each warning message of the plurality of warning messages identifying at least one potential error in the computer program;

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an inference engine for inferring from a subset of the plurality of warning messages at least one suggested-fix heuristic corresponding to each identified potential error in the subset of the plurality of warning messages;

an association module for associating each suggested-fix heuristic with the warning message containing the corresponding identified potential error;

a grouping module for reordering the plurality of warning messages so as to group together sets of warning messages having substantially similar associated suggested-fix heuristics; and

a result file for generating a result comprising a subset of the plurality of warning messages ordered in grouped sets.

20. (original) The computer program product of claim 19, wherein the grouping module further subgroups together at least one subset of at least one of the grouped sets of warning messages, wherein each subset of warning messages identifies potential errors with respect to a particular aspect of the computer program.

21. (original) The computer program product of claim 20, where the particular aspect of the computer program comprises at least one of a variable, an object, an object reference, a location in the computer program, and a condition.

22. (original) The computer program product of claim 19, wherein the grouping module further super-groups together at least one superset of a plurality of the grouped sets of warning messages, wherein each superset of warning messages identifies potential errors with respect to a particular aspect of the computer program.

23. (original) The computer program product of claim 22, where the particular aspect of the computer program comprises at least one of a variable, an object, an object reference, a location in the computer program, and a condition.

24. (original) The computer program product of claim 19, wherein the generated result further comprises, for each grouped set, a representative suggested-fix heuristic

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representing the substantially similar associated suggested-fix heuristics.

25. (original) The computer program product of claim 24, wherein the generated result does not include the substantially similar associated suggested-fix heuristics.

26. (original) The computer program product of claim 19, wherein the generated result identifies, for each grouped set, a representative potential error representing the identified potential errors of the warning messages in the grouped set.

27. (original) The computer program product of claim 19, wherein the generated result identifies, for each grouped set, a representative potential error representing a plurality of distinct potential errors identified by the warning messages in the grouped set.

28. (original) The computer program product of claim 19, further comprising, when more than one suggested-fix heuristic is inferred for a corresponding identified potential error, instructions for duplicating the warning message containing the corresponding identified potential error so that the association module generates separate suggested-fix heuristic/warning message pairs for each suggested-fix heuristic of the more than one inferred suggested-fix heuristic.

29. (original) The computer program product of claim 19, wherein the grouping module reorders the plurality of warning messages so as to cluster warning messages together based on classes of associated suggested-fix heuristics, and further wherein the result file generates a result comprising a subset of the clustered warning messages.

30. (original) The computer program product of claim 19, wherein the substantially similar associated suggested-fix heuristics of each grouped set of warning messages are identical to each other.

31. (original) The computer program product of claim 19, wherein the result file further displays one grouped set of warning messages at a time.

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32. (original) The computer program product of claim 19, wherein the grouping module further orders the grouped sets of warning messages based on group size, and further wherein the result file generates a result comprising a subset of the ordered group sets of warning messages.

33. (original) A computer program product for use in conjunction with a computer system, the computer program product comprising a computer readable storage medium and a computer program mechanism embedded therein, the computer program mechanism comprising:

- a computer program;

- a computer program analyzer for identifying potential errors in the computer program;

- an inference engine for inferring, for each identified potential error, at least one potential solution;

- a grouping module for grouping together a set of the identified potential errors having substantially similar inferred potential solutions; and

- a result file for determining an actual error based on the substantially similar inferred potential solutions of the grouped set of identified potential errors.

34. (original) The computer program product of claim 33, wherein the substantially similar inferred potential solutions and the grouped set of identified potential errors have characteristics suggestive of the actual error.